

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002093**Date Inspected:** 07-Apr-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 1400**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2230**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Huang Wen pang/Shu Zhi**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

The Caltrans Quality Assurance (QA) Inspector Roscoe Dixon was present at the time requested to randomly observe welding and associated operations being performed for the Orthotropic Box Girders (OBG) and Tower.

**Bay 7 OBG:**

The QA Inspector observed ZPMC qualified welders Mr. Zhang Qing Quan ID 044774 and Mr. Hong Shuili ID044815 utilizing Flux Cored Arc Welding (FCAW) process with ZPMC Weld Procedure Specification (WPS) WPS-B-7-2231-TC-U46-F to weld the complete joint penetration (CJP) weld joints of floor beams diaphragms. Mr. Zhang Qing Quan was observed in the process of welding on weld joints (WJ)'s FB022-001-126, and Mr. Hong Shuili was in the process of welding on (WJ)'s FB022-001-127, and FB022-001-128.

During the welding of floor beam weld joint number FB022-001-126 the QA Inspector verified the weld parameters of both welders for conformance with the approved WPS utilizing a Fluke Meter, Mr. Hong Shuili's welding machine amperes registered at 302 with 29.8 volts and Mr Zhang Qing Quan ID 044774 welding machine amperes registered 293 and 30.2 volts.

The QA Inspector visually verified the filler metal being used for the FCAW process welding as Supercored 71H with a diameter of 1.4 millimeters mm. The QA Inspector observed that during the shift ZPMC CWI, Hu Wei Qing and various CAWI Inspectors were monitoring the electrical parameters, travel speed and temperatures in Bay #7 during the shift.

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The QA Inspector randomly observed ZPMC Welding Operator Wang Ming ID 048296, utilizing the Submerged Arc Welding (SAW Process with ZPMC Weld Procedure Specification (WPS) WPS-B-T-2221-BL2-C-S-1 to complete filler weld passes for various 12mm to 30mm transition floor beam web plate weld joints. The QA Inspector visually verified a single electrode was being utilized for the filler passes. The filler metal being used was JW-3 with a diameter of 4.8 millimeters.

The floor beam randomly observed being welded during this QA Inspector's shift included: FB015-009-026, the welding machine amperes were verified at 518 and 30.5 volts. The QA Inspector verified the preheat temperature with a 50 degree Celsius temple stick heat crayon.

Bay 4:

The QA Inspector observed welding operator Gu Cai Hong ID053748 utilizing WPS) WPS-B-T-3221-BU3-C-S-1 in the 1G (Groove) position to weld fill passes for tower diaphragm sub assembly P284 (N) + SA 276 (N).

The QA Inspector visually verified a single electrode was being utilized for the fill weld passes, and the filler metal was LA-85 with a diameter of 4.8 millimeters.

The Flux was verified as MIL800-HPN1, the base material listed on the (WPS) as HPS 485WT2 Shear Link grade 485. The QA Inspector observed and noted that during the welding operation the ZPMC welding operator would before welding over previous deposited weld pass utilized the proper cleaning method to remove slag prior to resuming the welding operation.

The QA Inspector observed that during the shift ZPMC CWI, Zhao Chen Sun and various ZPMC CAWI Inspectors monitoring the electrical parameters, travel speed and temperatures at several welding stations in Bay # 4.

After the completion of approximately 50 % of the weld joint the welding was stopped, and the ABF Inspector Li Hanjie informed the QA Inspector that the diaphragm plate was to be turned over and welding would be performed on the other side in order to limit welding distortion to the plate material. The work being performed was in progress generally appeared to conform to contract specifications.

Bay 3 OGB:

The QA Inspector randomly observed ZPMC qualified Welder Du Heng Hua ID 037779 utilizing the Shielded Metal Arc Welding (SMAW) Process with ZPMC Weld Procedure Specification (WPS) WPS-B-P-2112-FCM to tack weld various edge plates EP016-001-006 and EP019-001-005.

These two above listed stiffeners were visually verified by the QA Inspector as being welded to Seismic Performance Critical Member (SPCM) plate material, and the QA Inspector visually verified the filler metal being used to weld the stiffeners to the Seismic Performance Critical Member (SPCM) plate material as electrode THJ506Fe-11 with a diameter of 1.0mm.

During the tack welding of edge plate stiffener EP019-001-005 the QA Inspector verified the welding machine

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amperes at 263 utilizing a Fluke Meter.

The QA Inspector also observed ZPMC qualified Welder Zhang Feng ID 049769 utilizing the Shielded Metal Arc Welding (SMAW) Process with ZPMC Weld Procedure Specification (WPS) WPS-B-P-2112 to weld stiffener side plates RS92C, weld joints's SP422-001-001 and SP422-001-002 piece mark SP 422 A to Non SPCM plate material, and the electrode filler metal was verified as TL-508.

During the welding the QA Inspector randomly verified the welding machine amperes at 159 utilizing a Fluke Meter.

The QA Inspector observed ZPMC qualified Welder Li Zhaoqian ID 048810 utilizing the Flux Cored Arc Welding (FCAW) process with ZPMC Weld Procedure Specification B-T-3221-B-U3C-S-1 to weld a root pass for stiffener EP001-001-001.

During the welding of the root pass the QA Inspector verified the welding machine amperes and voltage utilizing a Fluke meter which registered 280 amperes with 32 volts.

The QA Inspector observed that during the shift ZPMC CWI, Huang Wen pang and various ZPMC CAWI Inspectors monitoring the electrical parameters, travel speed and temperatures at several welding stations in Bay # 3. The work being performed was in progress generally appeared to conform to contract specifications.

Bay 8:

The QA Inspector randomly observed ZPMC Welding Operators Ma Ying ID 045270 WPS) WPS-B-T-3221-BU3-C-S-1 in the 1G (Groove) position to weld fill passes for SA309 (E)+P775(E), weld joint ESD1-SA309-11A/12A.

The QA Inspector visually verified a single electrode was being utilized for the filler passes, the filler metal was LA-85 with a diameter of 4.8 millimeters.

The Flux was verified as MIL800-HPN1, the base material listed on the (WPS) as HPS 485WT2 Shear Link grade 485. The QA Inspector observed and noted that during the welding operation the ZPMC welding operator would before welding over previous deposited weld pass utilized the proper cleaning method to remove slag prior to resuming the welding operation.

The QA Inspector observed that during the shift ZPMC CWI, Sha Zhi and various ZPMC CAWI Inspectors monitoring the electrical parameters, travel speed and temperatures at several welding stations in Bay # 8.

The work being performed was in progress generally appeared to conform to contract specifications.

For more detail see photographs shown below:

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### Summary of Conversations:

As noted within the report shown above.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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**Inspected By:** Dixon,Roscoe

Quality Assurance Inspector

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**Reviewed By:** Hager,Craig

QA Reviewer